# User Manual

## Industrial PCs

## BPC1000

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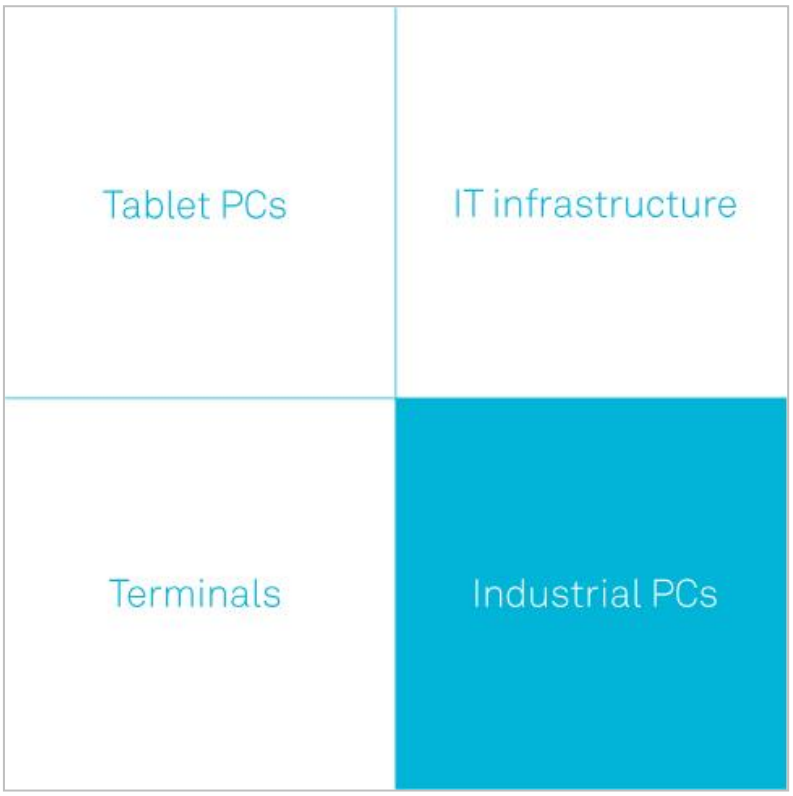
the rugged world of IT®

# Product Portfolio

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# ABOUT US

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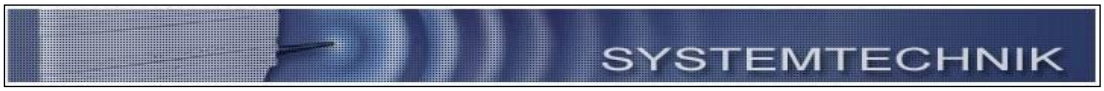
ads-tec GmbH provides large enterprises and globally active corporations with cutting edge technology, up-to-date know-how and comprehensive services in the area of automation technology, data processing technology and systems engineering.

ads-tec GmbH implements full automation solutions from planning to commissioning and is specialized in handling and material handling technologies.

The data systems division develops and produces PC based solutions and offers a broad range of industrial PCs, thin clients and embedded systems.




ads-tec is specialized in modifying and optimizing embedded operating systems and develops software tools to complement its hardware platforms.

# 1 REMARKS

## 1.1 RELEVANT DEVICE DOCUMENTATION

Consult the following documentation for information pertaining to device setup and operation:

**USER MANUAL ON THE SERVICE CD (THIS DOCUMENTATION):**

Contains information pertaining to device mounting, startup and operation as well as the technical data for the device hardware.

**SERVICE CD:**

Contains drivers, user manual and installation instructions for installing drivers.

## 1.2 DESCRIPTION OF THE WARNING SYMBOLS USED IN THIS GUIDE

**Warning:**

The “Warning” symbol precedes warnings on uses or operations that might either lead to personal injury and/or hazards, or to any hardware and software damages.

**Note:**

This Symbol indicates special notes, terms and/or conditions that strictly need to be observed to ensure optimised and/or zero-defect operations. It also precedes tips and suggestions for efficient unit implementation and software optimisation.

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## 1.6 ENVIRONMENTAL CONDITIONS

The device may be operated under the following conditions. Failure to observe these specifications will terminate any warranty for this device. Ads-tec cannot be held liable for any damages arising due to improper use and handling.

- Environmental temperature
  In operation 0 … 55° C (incl. CF and without HDD)
  For storage -20 … 60° C

- Humidity
  In operation 10 … 85% without any condensate
  For storage 10 … 85% without any condensate

- Vibrations
  In operation 1 G, 10 … 150 Hz
  (DIN EN 60068-2-6)
- Shock resistance
  In operation 15 G, with a half-wave of 11 ms duration
  (DIN EN 60068-2-27)

## 1.7 STANDARDS

This device complies with the requirements and protective aims of the following EC regulations:

- This device complies with the test regulations according to EN 60950 and EN 6100-6-4:2001
- The device also meets the test regulation requirements in accordance with EN61000-6-2:2001 and EN 60068-2-6 (sinus excitation)
- This device complies with the test regulations in accordance with EN 60068-2-27 (shock test) and EN 55011, class A

**Note:**

A respective conformity declaration for the authority in charge is available on request from the manufacturer.

All connected components, as well as cable connections must also meet these requirements for compliance with the EMC legislation. For this reason, screened bus and LAN cables including screened connectors must be used and installed according to the instructions in this user manual.

## 1.8 EQUIPMENT VERSIONS

The system is available in the following equipment versions:

| BPC 1000 | PC version | ZEPHE version | Interbus version | Sercos version |
|---|---|---|---|---|
| Compact Flash memory | | | X | X |
| HDD | X | | | |
| ZEPHE module | | X | | |
| I/O | | | X | X |
| Interbus | | | X | As an option |
| NVRAM | | | As an option | As an option |
| Sercos | | | | X |
| Run / stop switch | | | X | X |

## 1.9 SCOPE OF DELIVERY

Please check that all of the following components are contained in the packaging:

- 1 x device
- Service CD including manual and drivers for Windows XP®

- 1 x 3-pin COMBICON connector
  Vendor: Phoenix Contact
  Part designation: MC 1,5 / 3-STF-3,81-BD

**Note:**
The COMBICON connectors in the following list are only included in the scope of delivery with the equipment version including I/Os.

- 1 x 6-pin COMBICON connector
  Vendor: Phoenix Contact
  Part designation: MCVR 1,5 / 6-STV-3,81

- 1 x 14-pin COMBICON connector
  Vendor: Phoenix Contact
  Part designation: MCVR 1,5 / 14-STV-3,81

- Wall bracket (pre-installed)

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# 2 OPERATING INSTRUCTIONS

This device contains electrical voltages and extremely sensitive components. User intervention is restricted to plugging in additional cards, only. The manufacturer or a service partner authorised by the manufacturer should be consulted if you plan to make further modifications. For this type of work, the device must be switched off at the mains and the power lead must be disconnected. Suitable measures for avoiding electrostatic discharge towards parts of the components when touching the equipment must be taken. If the device is opened by an unauthorised person, hazards for the user might arise and any warranty claim will cease.

General instructions:

- All users must read this manual and have access to it at all times.
- Installation, commissioning and operation may only be carried out by trained and qualified staff.
- The security instructions and the manual itself must be observed by all persons who work with this device.
- At the location of use the valid guidelines and regulations for accident prevention must be observed.
- The manual contains the most important instructions on how to use this device in a safe way.
- Appropriate storage, proper transport, installation and commissioning, as well as careful operation are prerequisites for ensuring safe and proper operation of the device.

**Warning:**

Any leads (e.g. power leads, interface cables) may only be connected if the device is switched off in order to avoid damaging the device.

## 2.1 OPERATING LOCATION

The control system is designed for use inside a switching cabinet. You must ensure compliance with the specified environmental conditions. Using the device in non-specified environments, like e.g. onboard of ships, in areas that might contain explosive gases or in extreme heights is prohibited.

**Warning:**

*The device may only be switched on after acclimatising to the ambient temperature in order to avoid condensate accumulation. The same applies if the device has previously been exposed to extreme temperature variations.*

*To avoid overheating: The device must not be exposed to direct radiation by sunlight or any other light or heat source.*

If the device is integrated in a panel, casing or similar enclosures, you must ensure that no heat accumulation builds up. The maximum permissible environmental temperature must never be exceeded.

## 2.1 DAMAGES DUE TO IMPROPER USE

Should the service system have evident signs of damages incurred e.g. due to wrong operation or storage conditions or due to improper unit use, the unit must be decommissioned or scrapped. Ensure that it is safe from accidental re-implementation.

## 2.2 Warranty / Repairs

During the unit warranty period, any repairs thereto must strictly be conducted solely by the manufacturer or by service personnel that has been duly authorised by the manufacturer.

## 2.3 Handling and proper disposal of lithium batteries

**Caution:**
Danger of explosion and the release of toxic substances

Lithium batteries should not be exposed to fire, soldered, recharged, opened, short-circuited, reversed or heated above 100 °C and they should be disposed of properly as well as protected against sunlight, moisture and condensation.

The lithium battery can only be replaced by the same type or a type recommended by the manufacturer.

The used lithium battery should be disposed of in accordance with local legal regulations.

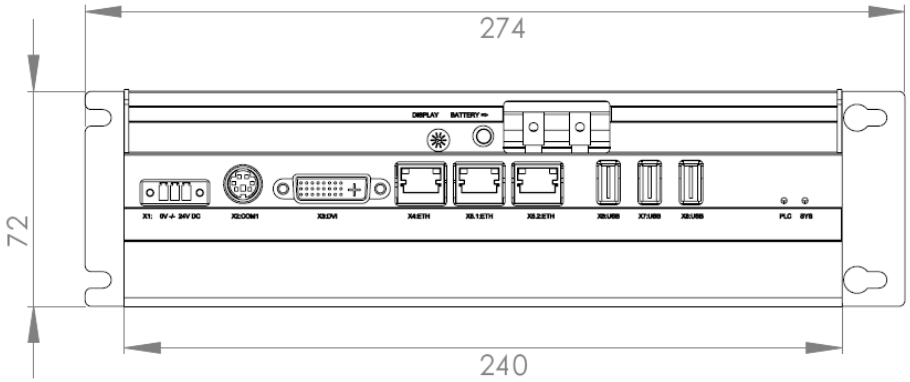
## 2.4 Safety Instructions

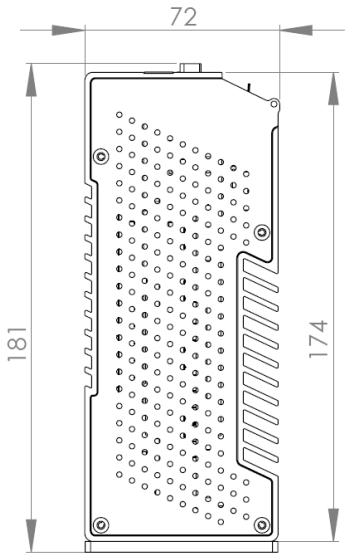
**Warning:**
All unit assembly operations must be strictly conducted only under safe, secure and zero-potential conditions.

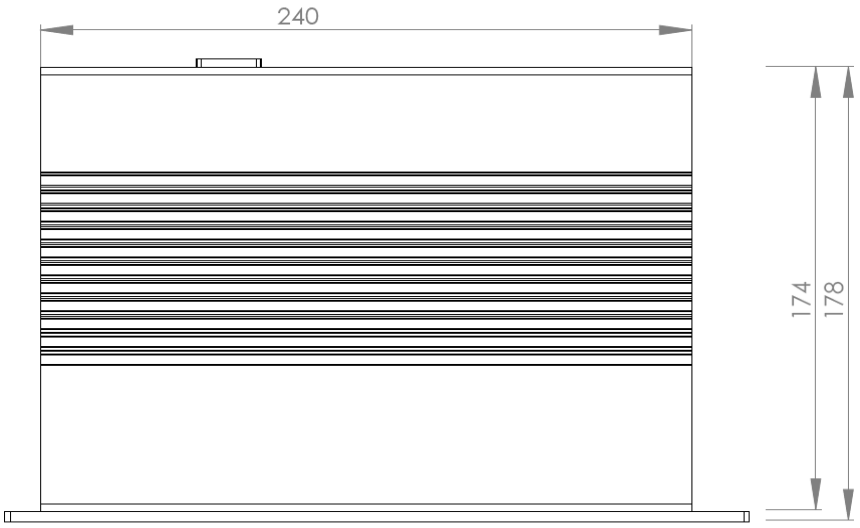
**Special Note:**
When handling parts and components susceptible to electrical discharge, please accurately observe all the relevant safety provisions.
(DIN EN 61340-5-1 / DIN EN 61340-5-2 refers)

# 3 INSTALLATION

## 3.1 LAYOUT FOR DEVICE INSTALLATION



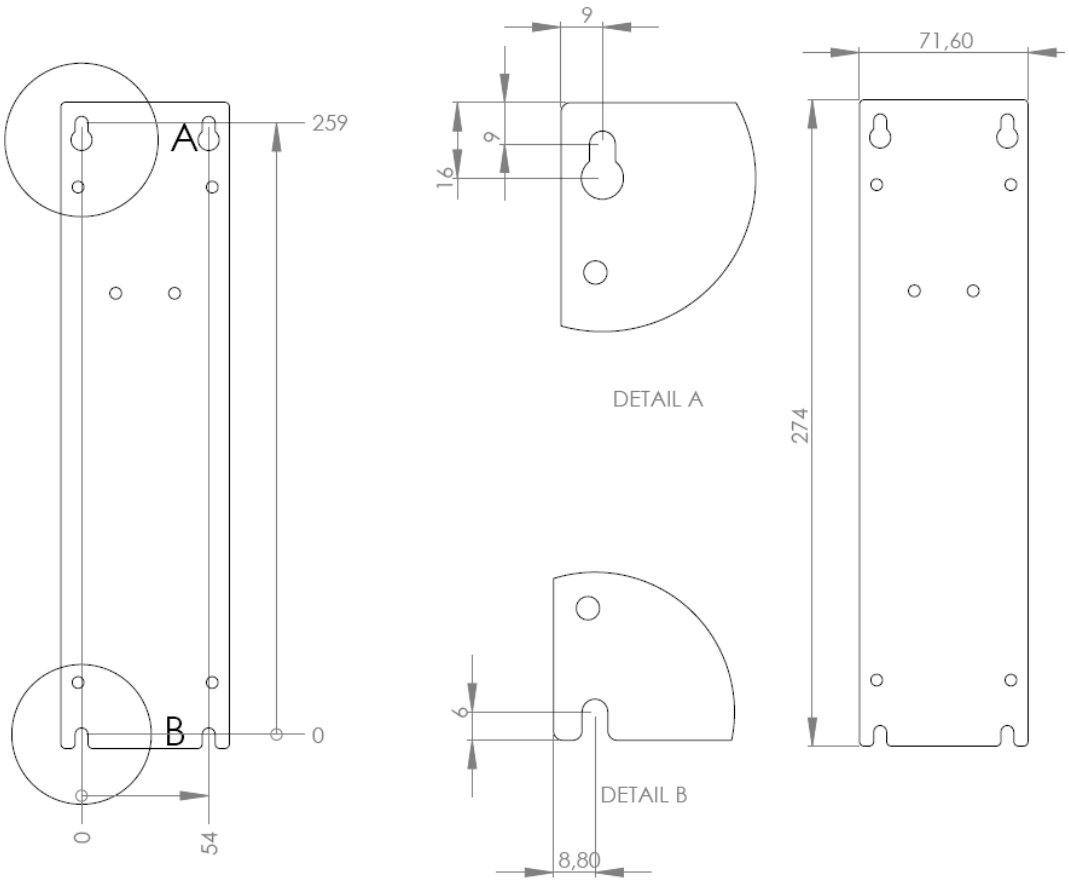



## 3.2 ORDER OF INSTALLATION

The BPC 1000 device may be installed by using the pre-installed wall-mount bracket.

The wall-mount bracket allows installing the device on a wall or inside a switching cabinet. The BPC 1000 installation at the intended location can be carried out by using both holes at the upper and lower edge of the wall-mount bracket.

Dimensions and distances may be determined in detail from the figure.

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# 4 COMMISSIONING

The power supply connection and interfaces of this device are installed at the device front panel. All supply leads and all required data leads have to be connected before starting commissioning.

**Warning:**

The device must be switched off before connecting or disconnecting any cables in order to prevent damage to the electronics!

The device may only be switched on after acclimatising to the ambient temperature in order to avoid condensate accumulation. Make sure to meet the permissible voltage requirements for this device.

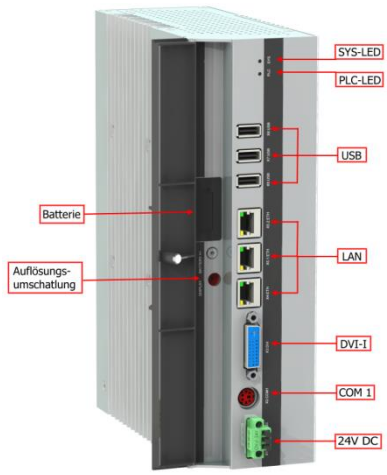
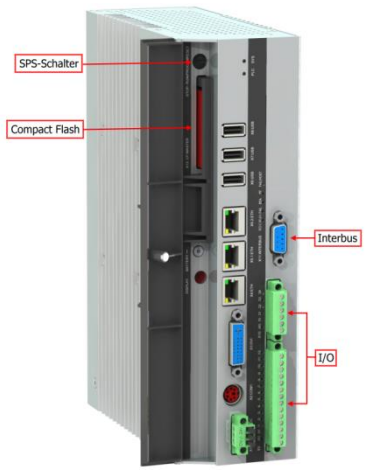
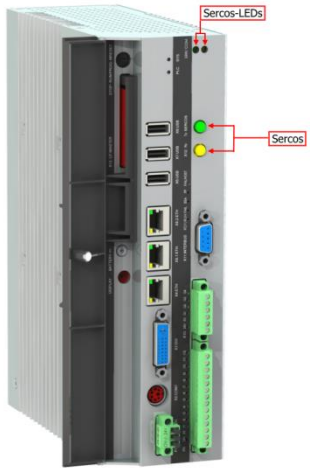
After switching off and before switching on you must wait for at least 5 seconds.

**Note:**

The screen of a data cable must always be connected with the connector housing (EMC).

Under the embedded operating system, interfaces must explicitly be enabled and required drivers must be installed for being able to use them.

## 4.1 AVAILABLE INTERFACES

| PC VERSION | INTERBUS VERSION | SERCOS VERSION |
|---|---|---|
|  |  |  |



## 4.2 CABLE INSTALLATION

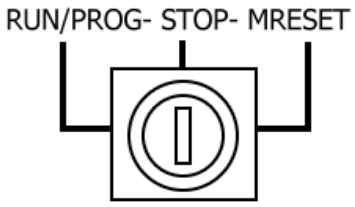
The BPC 1000 interfaces are installed in the front of the device. Install required data leads and secure them against slipping out.

## 4.3 OPERATIONAL READINESS CHECK

- Connect the power cable to the power source.
- Check the device to determine whether damages have been caused by improper transport, incorrect operation or storage conditions or improper handling (e.g. smoke emission from the device, etc.). If damages are found, immediately shut down the device and protect it against unintentional startup.

## 4.4 PLC SWITCH

The PLC switch is located underneath the cover at the front of the device. The PLC software can be controlled by using the PLC switch. The function of individual switch positions may vary depending on the software and PLC version used. Additionally, you can read current status information by using the keys.




**EXAMPLE:**

| SWITCH POSITION | DESCRIPTION |
|---|---|
| RUN / PROG: | Run or programming status |
| STOP: | PLC is stopped |
| MRESET: | The PLC is reset |

## 4.5 STATUS DISPLAYS

**SYS LED (BICOLOURED)**

Depending on the colour and type of flashing different device states are displayed by the SYS LED.

The following signals are displayed:

- LED lights green — The device is ready for operation (Power ON).
- LED flashes red — Environmental temperature too high.
- LED is off — The device is switched off. (POWER OFF)

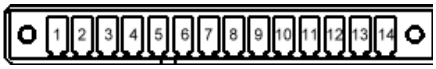
## 4.6 PLC LED (TWO COLORS)

This LED indicates the status of a soft PLC. A soft PLC has to be installed in order for this LED to display various signals. Various device statuses are indicated by the colors and flashing patterns of the PLC LED.

# 5 INTERFACES

## 5.1 DIGITAL INPUT

| PIN NUMBER | SIGNAL NAME |
|---|---|
| 1 | 24V DC |
| 2 | GND |
| 3 | Input 1 |
| 4 | Input 2 |
| 5 | Input 3 |
| 6 | Input 4 |
| 7 | Input 5 |
| 8 | Input 6 |
| 9 | Input 7 |
| 10 | Input 8 |
| 11 | Input 9 |
| 12 | Input 10 |
| 13 | Input 11 |
| 14 | Input 12 |



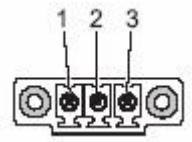

## 5.2 DIGITAL OUTPUT

| PIN NUMBER | SIGNAL NAME |
|---|---|
| 1 | 24V DC |
| 2 | GND |
| 3 | Output 1 |
| 4 | Output 2 |
| 5 | Output 3 |
| 6 | Output 4 |

## 5.3 24 V DC POWER SUPPLY

The power supply voltage is supplied via a feed-through clamp including screw connection (figure shows socket in the device).

| PIN NUMBER | SIGNAL NAME |
|---|---|
| 1 | 24V DC |
| 2 | PE |
| 3 | 0 VDC |




Technical data of the power adapter

- Power consumption: Max. 60 Watts
- Input voltage: 24V DC

**Note:**
The typical power consumption of this device is indicated in the "Technical details" chapter.

## 5.4 USB CONNECTIONS

The USB interfaces are used for connecting peripherals with USB connection. The interface complies with the USB 2.0 standard.

| PIN NUMBER | SIGNAL NAME |
|---|---|
| 1 | VDC |
| 2 | D - |
| 3 | D+ |
| 4 | GND |

**Note:**
The USB interfaces may be locked using the Lock USB software tool.
You'll find the software and the documentation on the service CD.

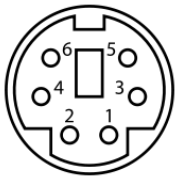
## 5.5 NETWORK CONNECTION (RJ45)

If the drivers required for functioning are installed on the device, the control system may be integrated in an Ethernet network supporting the 10/100/1000 Mbit standard by using the Ethernet 10/100BaseT network connector. Specifications of this network topology must be observed in this case. You can install the drivers required for functioning from the enclosed service CD, should they not be installed on the device.

## 5.6 COM PORT

The mini-DIN interface in the device is used as a COM port.

| PIN NUMBER | SIGNAL NAME |
|---|---|
| 1 | Data |
| 2 | NC |
| 3 | GND |
| 4 | +5V |
| 5 | Clock |
| 6 | NC |

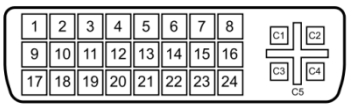


## 5.7 DVI INTERFACE

The DVI Interface is used to transfer analog and digital video signals. A DVI-I Cable is required to connect a digital display to the device. It is also possible to connect a VGA display by using a suitable DVI-VGA adapter.

**Notice:**
The DVI Interface is a Single Link Interface. The video signals are transferred analog and digital.

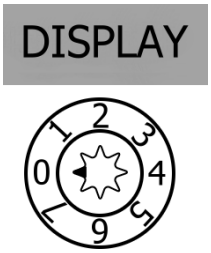
| PIN-NUMMER | SIGNAL NAME |
|---|---|
| 1 | TMDS Data2- |
| 2 | TMDS Data2+ |
| 3 | TMDS Data2/4 Shield |
| 4 | N/C |
| 5 | N/C |
| 6 | DDC Clock [SCL] |
| 7 | DDC Data [SDA] |
| 8 | Analog vertical sync |
| 9 | TMDS Data1- |
| 10 | TMDS Data1+ |
| 11 | TMDS Data1/3 Shield |
| 12 | N/C |
| 13 | N/C |
| 14 | +5V Power |
| 15 | Ground (for +5V) |
| 16 | Hot Plug Detect |
| 17 | TMDS Data0- |
| 18 | TMDS Data0+ |
| 19 | TMDS Data0/5 Shield |
| 20 | N/C |
| 21 | N/C |
| 22 | TMDS Clock Shield |
| 23 | TMDS Clock+ |
| 24 | TMDS Clock- |
| C1 | Analog Red |
| C2 | Analog Green |
| C3 | Analog Blue |
| C4 | Analog Horizontal Sync |
| C5 | Analog GND Return: (analog R, G, B) |




## 5.8 SWITCHING THE RESOLUTION

The feature of switching the resolution allows manually changing the display resolution at the device. Stages 0-2 are the predefined default settings you can find in the table. Stages 3-7 are undefined defaults. A resolution of 800 x 600 is used for output by default.

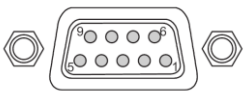
| NUMBER | RESOLUTION |
|---|---|
| 0 | 800 x 600 |
| 1 | 1024 x 768 |
| 2 | 1280 x 1024 |
| 3 | [DEFAULT] 800 x 600 |
| 4 | [DEFAULT] 800 x 600 |
| 5 | [DEFAULT] 800 x 600 |
| 6 | [DEFAULT] 800 x 600 |
| 7 | [DEFAULT] 800 x 600 |




## 5.9 INTERBUS

This interface is integrated inside the device depending on the version.

| PIN NUMBER | SIGNAL NAME |
|---|---|
| 1 | DOH |
| 2 | DIH |
| 3 | GNDi |
| 4 | GND |
| 5 | Vcci |
| 6 | DOL |
| 7 | DIL |
| 8 | Vcc |
| 9 | Not connected |



# 6 SOFTWARE & DRIVER INSTALLATION

The device will be delivered with a pre-installed Windows operating system on request by the customer. The drivers required for this, are already installed and the operating system will be enabled by entering the licence information. Should an initial installation be required, please follow the following steps. With a later operating system like Windows XP, the network card and graphics card will properly be recognised during the initial installation, so that only additional hardware cards must separately be installed.

**Note:**

If the hard drive was formatted, the installation can be carried out by using the internal drives, the USB interface or the network connection.

An external keyboard is required for installation.

## 6.1 INSTALLING THE OPERATING SYSTEM

If the device is not equipped with an integrated drive, installing the operating system can only be carried out by using either a network connection or the USB interface. In order to perform the installation by using the network, the device must be able to access the CD-ROM drive of another PC.

Procedure for installation:

Network: Create a bootable DOS drive with access to the user-specific network.

Boot the device by using the DOS drive and install a boot partition on the hard disk.

Copy the i386 folder from the CD-ROM to the hard drive of the device.

Copy drivers from the supplied CD-ROMs to the hard drive of the device.

USB: The boot drive in the system Bios must be switched to USB in order to boot the device from the USB interface.

Restart the device and insert the Windows CD.

Install the required software and/or the required drivers.

If Windows CE.net or Windows XPe is used, the entire operating system may be completely installed from the USB stick using the respective image.

## 6.2 LOCK USB FUNCTION

**FUNCTIONAL SCOPE:**

The Lock USB function allows locking of USB ports. If the lock is switched on, the USB ports will be disabled by the operating system. Connected devices will not be recognised.

**SYSTEM REQUIREMENTS:**

The Lock USB function requires the Windows XP® or Windows XP embedded® operating system as a prerequisite.

**INSTALLATION**

**Note:**
This tool and the related documentation is included on the supplied service CD.

# 7 TECHNICAL DETAILS

## 7.1 COMPUTER DATA

The device may be equipped with the following ads X modules ex factory (according to customer requirements)

| | |
|---|---|
| **VERSION 1** | INTEL Celeron M 800 MHz ULV<br>256MB - 2GB DDR RAM<br>Intel 855 GME |
| **VERSION 2** | INTEL Pentium M 1.4 GHz 2MB Cache<br>256MB - 2GB DDR RAM<br>Intel 855 GME |
| Graphic memory | A max. of 32 MB shared memory |
| Mass storage device | 1 x compact flash device, 256MB-2GB under front cover, external access<br>**AS AN OPTION:**<br>2.5" HDD incl. at least 60GB of internal storage / 1 x ZEPHE module with 1GB - 4GB |
| Interfaces: | 1 x COM 1 (on a mini RS232 DIN socket),<br>1 x DVI-I<br>3 x USB 2.0 |
| Network | 3 x Ethernet:<br>1 x controller 82551QM switched on 2 RJ45 connectors (10/100 Mbit)<br>1 x controller 82541ER (10/100/1000Mbit) |

## 7.2 GENERAL DATA

| | |
|---|---|
| External dimensions | 72 mm x 240 mm x 174 mm (W x H x D) |
| Weight | approx. 2.3 kg |
| Protection class | IP 20 |
| Power consumption | 60 Watts (typical) |
| Max. switch-on current | 2.5 Amperes (for 2ms) |

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# 8 SERVICE AND SUPPORT

ads-tec and appointed partner companies offer you comprehensive maintenance and support services, ensuring quick and competent support should you have any questions or concerns with regard to ads-tec products and equipment.

ads-tec products may also be provided and installed by partner companies. Such devices may have customised configurations. Should any questions arise with regard to such specific settings and software installations, please contact the system supplier in question as ads-tec will not be able to reply to such questions.

ads-tec does not provide support services for any device or unit that was not bought directly from ads-tec. In any such case, maintenance and support is provided solely by the partner company that supplied the device or unit.

## 8.1 ADS-TEC SUPPORT

Das Support Team von ads-tec steht für Direktkunden von Montag bis Freitag von 8:30 bis 17:00 unter der unten genannten Telefonnummer zur Verfügung:

Tel: +49 7022 2522-202

Fax: +49 7022 2522-2602

E-Mail: support@ads-tec.de

## 8.2 COMPANY ADDRESS

ads-tec GmbH

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Germany

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Fax: +49 7022 2522-400

E-Mail: mailbox@ads-tec.de

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